

REMARKS

The present amendment is submitted in response to the Office Action mailed November 2, 2007. Claims 1-12 remain in this application. In view of the amendments above and the remarks to follow, reconsideration and allowance of this application are respectfully requested.

Allowable Claims

Applicant wishes to thank the Examiner for indicating that Claims 3 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants have elected to rewrite dependent Claim 3 in independent form including all of the limitations of independent Claim 1 (see new Claim 11). Hence, it is believed that Claim 11 is in condition for allowance. Applicants have also elected to rewrite dependent Claim 10 in independent form including all of the limitations of independent Claim 7 (see new Claim 12). Hence, it is believed that Claim 12 is in condition for allowance.

Objection to the Abstract

In the Office Action, the abstract of the disclosure was objected to because it failed to comply with the proper language and format for an abstract of the disclosure. By means of the present amendment, the current Abstract has been amended as shown in the

enclosed Replacement Abstract in a manner which is believed to overcome the objection.

Withdrawal of the objection is respectfully requested.

Objections to the Specification

In the Office Action, the Specification was objected to for the following informalities. The phrase “the measure of the” is difficult to understand. In response, this phrase has been deleted in paragraphs, 7, 8, 9, 12, 13 and 14.

In the Office Action, the Examiner objected to the specification as containing (371) continuing information on page 1 that requires updating. Applicants respectfully submit that no cross-reference to a continuing information is required, since the present application is the U.S. national stage of PCT/IB2003/006299 (*i.e.* the application itself) rather than a continuation filed from it. Applicants respectfully request withdrawal of this objection.

In the Office Action, the specification was objected to for failing to include any section headings. Applicants respectfully decline to add headings as they are not required in accordance with MPEP §608.01(a).

35 U.S.C. §101

Claims 1 – 10 were rejected under 35 U.S.C. §101 as being allegedly directed to non-statutory subject matter. The rejection is understood to be based on the premise that the claimed invention is allegedly directed to non-statutory subject matter for failing to

place the invention squarely within one statutory class of invention because the claimed subject matter does not produce a result that is limited to having real world value rather than a result that may be interpreted to be abstract in nature. The Examiner further alleges that the produced result remains in the abstract and, thus, fails to achieve the required status of having real world value, because claims 1-10 are determined to be a mathematical algorithm, converting one set of numbers into another set of numbers, whereby the method does not manipulate appropriate subject matter, and thus cannot constitute a statutory process. Applicants respectfully traverse the rejection.

The real world application that the Examiner is searching for can be found in the reference cited by the Examiner in the 102 rejection of claims 1-2, 4-9. Specifically, in the 102 rejection the Examiner cites the Article by Yi, entitled “An Invariant Performance Measure for Surface Reconstruction Using the Volume Between Two Surfaces”. Yi states in the Introduction – **In computer vision (Applicants note - a real world application)**, surface reconstruction is necessary to derive a complete representation of a surface from sparse noisy sets of geometric information, such as depth, orientation or other sources of information. A reconstructed surface is an intermediate representation to bridge the gap between sensor data and symbolic descriptions. It is therefore respectfully submitted that **the produced result does not remain in the abstract**. The produced result is a complete representation of a surface from sparse noisy sets of geometric information. It is inconsistent to argue that the invention does not have real world value and produce a reference that teaches surface

reconstruction from a data set. Clearly Yi is directed to a method having real world value. Therefore, reconsideration and withdrawal of the rejection is respectfully requested.

Rejections under 35 U.S.C. §102(b)

Claims 1, 2 and 4-9 stand rejected under 35 U.S.C. §102 (b) as being anticipated by the article by Yi et al., entitled “An Invariant Performance Metric for Surface Reconstruction Using the Volume Between Two Surfaces”. Applicant respectfully traverses the rejection.

Regarding claims 1 and 7, the Examiner contends that Yi discloses reconstructing a surface of an object; the object being represented by a two-dimensional grid of measurements. The Examiner directs the Applicants attention to the Abstract of Yi in support. Applicants respectfully disagree for at least the following reasons.

Yi, in the Abstract describes a quantitative measure for comparing reconstruction results, namely, the volume between two surfaces normalized by the surface area. In other words, Yi teaches a technique for comparing reconstruction results based on **two previously derived reconstruction results** as input to the comparison. As such, it should be understood that Yi is therefore not directed to **deriving a reconstruction result** (i.e. reconstructing a surface of an object as, for example, recited in Claims 1, 7, 11 and 12)), as taught by the invention. In contrast to Yi, the Invention is directed to a method for **deriving a reconstruction result**.

With regard to the claim 1 and 7 rejections, the Examiner further contends that Yi discloses: *where for each grid point the measurements include corresponding information on a first slope of the surface in a first direction and a second slope of the surface in a different direction.* The Examiner directs the Applicants attention to page 605, Col. 1, section IV of Yi: entitled, Volume and Area by Two-Triangles Approximation.

Applicants respectfully disagree and refer the Examiner to page 602 of Yi, Section A. entitled - “*Approach*”, where Yi discloses techniques for computing the volume and surface area by approximating surface patches of a pre-existing reconstruction result. The volume and surface area computations are performed on a pre-existing reconstruction result in Yi. The Examiner is reminded that the invention is directed to deriving a reconstruction result and not operating on a pre-existing reconstruction result, Applicants respectfully refer the Examiner to Fig. 2(b), 2(c) and 2(d) of Yi. These figures illustrate various approaches for computing the volume and area between two surfaces of a pre-existing reconstruction result. In accordance with the various approaches, volume and area of a pre-existing reconstruction result is computed by approximating each surface patch (see Fig. 2(b)) defined by $z(x_i, y_j)$, $z(x_{i+1}, y_j)$, $z(x_j, y_{j+1})$ and $z(x_{i+1}, y_{j+1})$, by a least squared error plane in accordance with a first approach (see Fig. 2(c)) and by a two-triangle approach in a second approach (see Fig. 2(d)). The Examiner specifically relies on the latter approach, i.e., the two-triangle approach, in making the rejection of claims 1 and 7.

As should be apparent upon reviewing each of these approaches in Yi, there is no teaching or suggestion of using grid point slope information to compute volume and surface area, as alleged by the Examiner. Yi is silent with respect to the use of slope information.

Given that Yi does not teach the use of slope information, it is further submitted that Yi cannot teach the further step of *–selecting a 2-dimensional part of the grid and fitting a corresponding part of the surface to the measurements of all grid points in the selected part, where the fitting for each grid point of the selected part is based on both the corresponding first and second slope information.*

It is therefore respectfully submitted that at least the limitations and/or features of independent Claims 1 and 7 are believed to be patentably distinct over Yi. Therefore, reconsideration and withdrawal of the rejection is respectfully requested and allowance of claims 1 and 7 is respectfully requested.

Claims 2-6 and 8-10 depend from claims 1 and 7, respectively. These claims are patentable at least by virtue of their dependency.

Based at least on the above amendments and remarks, Applicant respectfully submits that the claims are not anticipated by the prior art of record, and requests reconsideration and removal of the outstanding rejections under 35 U.S.C. § 102.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims presently pending in the application, namely, Claims 1-12 are believed to be in condition for allowance and patentably distinguishable over the art of record.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call Mr. Frank Keegan, Intellectual Property Counsel, Philips Electronics North America, at 914-333-9663.

Respectfully submitted,



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